

**ABSTRACT OF THE DISCLOSURE**

The invention provides a human erythropoietin polypeptide variant containing a human erythropoietin amino acid sequence having an amino acid difference in two or more different Epo-modification regions and an enhanced erythropoietin activity, or a functional fragment thereof. Also provided is a human erythropoietin polypeptide variant containing a human erythropoietin amino acid sequence having an amino acid difference in two or more different Epo-modification regions and a moderated erythropoietin activity, or a functional fragment thereof. The invention further provides a composition containing a human erythropoietin polypeptide variant having an amino acid sequence selected from SEQ ID NOS: 4, 6, 8, 14, 16, 18, 26, 28, 30, 34, 36, 38, 40, 42, 44, 48, 50, 54, 56, 60, 62, 66, 68, 70, 72, 74, 76, 82, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 112, 116, 118, 120, 122, 124, 132, 134, 138, 144, 148, 150, 152, 160, 162, 164, 166, 170, 172, 174, 184, 188, 192, 194, 196, 198, 200, 206, 210, 212, 218, 220, 222, 224, and a pharmaceutically acceptable medium.